ANNUAL DRINKING WATER QUALITY REPORT FOR 2002

Our Goal

"...the quality of water produced and distributed shall meet or exceed all State and Federal standards governing such distribution."

--excerpt, Statement of Purpose, Lincoln Water System

Lincoln Water System
2021 N. 27th
Lincoln, NE

Coleen Seng
Mayor

Allan Abbott
Director
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This report and other information about water is available on the City's website at:

http://www.ci.lincoln.ne.us/city/pworks/water/index.htm

INTRODUCTION

To comply with State and Federal regulations, the Lincoln Water System annually issues a report describing the quality of your drinking water. The purpose of this report is to raise your understanding of drinking water and awareness of the need to protect our drinking water sources. Last year, your tap water met all State and Federal drinking water health standards. This report provides an overview of last year's water quality, including details about your sources of water, what it contains and how it compares to State and Federal standards.

Este formulario tiene información muy importante acerca del agua que usted bebe. Consiga que alguien se lo lea en español.

Đây là một tài liệu rất quan trọng về nước uống của chúng ta tại Lincoln, xin quí bạn dành thì giờ để tìm hiểu. Tài liệu bằng tiếng Việt nam sẽ được in một ngày rất gần.

WHERE DOES OUR WATER COME FROM?

In general, the sources of drinking water (both tap and bottled) include rivers, lakes, streams, ponds, reservoirs, springs and wells. As water travels over the surface of the land or through the ground, it dissolves naturally occurring minerals and can pick up substances resulting from the presence of animals or human activities. Contaminants that may be present in source water include microbial contaminants; organic or inorganic contaminants; pesticides; herbicides; and radioactive contaminants. To ensure that tap water is safe to drink, the Environmental Protection Agency (EPA) prescribes regulations which limit the amount of certain contaminants in water provided by public water systems. Food and Drug Administration regulations establish limits for contaminants in bottled water which must provide the same protection for public health.

The Lincoln Water System serves more than 232,000 people who use an average of 40 million gallons of water every day. Fortunately, our community receives its water from a self-replenishing source naturally high in quality. Lincoln's water comes from groundwater.

A source water assessment has not yet been completed. If you are interested in finding out about the Source Water Assessment Program, please call the Nebraska Department of Environmental Quality's Ground Water Section at (402) 471-0096.

PURIFYING OUR WATER

Thanks to the natural filtration of the aquifer, nature has already done much of the work in enhancing the quality of Lincoln's water. Our water still contains iron and manganese, which pose no health concern but can stain clothing and plumbing fixtures. To remove these unwanted elements, water is pumped to the water treatment plants. The water flows through one of two processes before it is sent to your home or business.

1. The oldest process, highly effective since the 1930s, uses aeration, chlorination, detention and filtration. An exact amount of chlorine is added to the water in a large underground reservoir. The water is held in the reservoir for up to two hours. The iron and manganese form particles which are then trapped in the sand and gravel filters. The filters are cleaned every 120 hours using a process called backwashing.

2. The second process uses ozone technology. Ozone, an extremely strong oxidizer and disinfectant, reacts quickly with iron and manganese to form particles which are then removed in the filtration process.

The next step is vital to protecting the health of our community. Once the water passes through the filters, small but exact amounts of chlorine and ammonia are added. These chemicals combine to form a disinfectant called "chloramine" which prevents the growth of bacteria in the city's water pipes. Finally, fluoride is added to help prevent tooth decay.

REPEATED TESTING

Our commitment to your water quality does not end when the water leaves the treatment plant. Water samples from homes and businesses throughout the city are tested daily. We work closely with the Nebraska Department of Health and Human Services to test the water using approved EPA procedures.

We go a step farther. In addition to government-mandated testing for nearly 100 regulated compounds, our own laboratory technicians regularly test your water to make sure that the treatment process at the plant is working correctly.

Home Treatment Systems

Since all water supplied by the Lincoln Water System meets or exceeds every state and federal safe drinking water standard, home water treatment devices to further improve quality is an individual option.

Should you consider purchasing a home water treatment system, determine what the device will remove and the total cost of maintenance.

MCL - Maximum Contaminant Level: The highest level of a contaminant allowed in drinking water. MCL's are set as close to the MCLG's as feasible using the best available treatment technology.

MCLG - Maximum Contaminant Level Goal: The level of a contaminant in drinking water below which there is no known or expected risk to health. MCLG's allow for a margin of safety.

N/A - Not applicable; **ND** - Not detected; **pCi/L** - pico Curies per liter (measure of radioactivity)

NTU - Nephelometric Turbidity Unit: A measure of the cloudiness of the water.

(a) Lincoln Peaking Wells were not used in 1998. These wells produced 0.07% of the water consumed in 2002.

(b) Samples collected from homes and businesses in the distribution system.

(c) Water from the treatment plant does not contain lead or copper. Tests for lead and copper are from the customer's tap to ensure the substances have not been dissolved from the customer's service or interior piping system.

(d) Fluoride is added in treatment to bring the natural level of about 0.4 ppm to the optimum of 1.0 ppm.

* Action Level is the concentration of a contaminant which triggers treatment or another requirement which a water system must follow.

(e) TT - Treatment Technique

Tested and Not Detected:
Inorganic Chemicals: Antimony, Beryllium, Cadmium, Cyanide, Mercury, Selenium, Thallium. *Volatile Organic Chemicals (VOC's)*: Benzene, Carbon Tetrachloride, o-Dichlorobenzene, p-Dichlorobenzene, 1,2-Dichloroethane, 1,1-Dichloroethylene, cis-1,2-Dichloroethylene, trans-1,2-Dichloroethylene, Dichloromethane, 1,2-Dichloropropane, Ethylbenzene, Monochlorobenzene, 1,2,4-Trichlorobenzene, 1,1,1-Trichloroethane, 1,1,2-Trichlorethane, Trichloroethylene, Vinyl Chloride, Styrene, Tetrachloroethylene, Toluene, Xylenes (total). *Non-Volatile Synthetic Organic Chemicals including herbicides and pesticides:* Alachlor, Benzo(a)pyrene, Carbofuran, Chlordane, Dalapon, Di(2-ethylhexyl)adipate, Dibromochloropropane (DBCP), Dinoseb, Di(2-ethylhexyl)phthalate, Diquat, 2,4-D, Endothall, Endrin, Ethylene Dibromide (EDB), Glyphosate, Heptachlor, Heptachlor Epoxide, Hexachlorobenzene, Hexachlorocyclopentadiene, Lindane, Methoxychlor, Oxamyl (Vydate), Pentachlorophenol, Picloram, Simazine, 2,4,5-TP (Silvex). *Disinfection - By - Products: Bromate*.

Unregulated Contaminants

Although unregulated, Lincoln Water System monitors the following contaminants:

Tested and Detected	Units	Ashland Plants	Lincoln
Bromodichloromethane	ppb	9.9	4.8
Bromoform	ppb	3.2	0.57
Chloroform	ppb	5.4	4.9
Dibromochloromethane	ppb	10.7	3.2
Sulfate (7/15/02)	ppm	88	55- 92.9
Trichlorofluoromethane	ppb	N/A	0.57

Tested and Not Detected:
1,1,1,2-Tetrachloroethane, 1,1,2,2-Tetrachloroethane, 1,1-Dichloroethane, 1,1-Dichloropropene, 1,2,3-Trichloropropane, 1,3-Dichloropropane, 1,3-Dichloropropene, 2,2-Dichloropropane, Bromobenzene, Bromomethane, Chlorobenzene, Chloroethane, Chloromethane, cis-2,3-Dichloroethylene, Dibromomethane, m-Dichlorobenzene, m-Xylene, o-Chlorotoluene, o-Xylene, p-Chlorotoluene, p-Xylene.

Water Quality Parameters *(12/18/02)*		
pH (in pH units)	7.61	
Total Alkalinity ($CaCO_3$)	156	ppm
Total Hardness ($CaCO_3$)	170	ppm
(10 grains per gallon)		
Total Dissolved Solids	271	ppm
Calcium	52.8	ppm
Chloride	17	ppm
Iron	<0.1	ppm
Manganese	3.35	ppb
Magnesium	19	ppm
Sodium	30	ppm
Sulfate	55	ppm

Lincoln's water is moderately hard. Alkalinity, pH, and hardness are important if considering a water softener.

TEST RESULTS *(2002 Data unless otherwise noted)*

Regulated Contaminants

Tested and Detected	Units	Regulatory Limit *(MCL)*	Goal *(MCLG)*	Ashland Plants	Lincoln *(a)*	Violation Yes/No	Likely Source*(s)*
Inorganic Contaminants							
Arsenic (7/24/02) - *Lincoln* (7/9/02) - *Ashland*	ppb	50	N/A	5.38-8.3	5.03	No	Erosion of natural deposits; Runoff from orchards; Runoff from glass and electronic production.
Barium (7/24/02) - *Lincoln* (7/9/02) - *Ashland*	ppb	2000	2000	99.2-130	101	No	Discharge of drilling wastes; Discharge from metal refineries; Erosion of natural deposits.
Chromium (7/24/02) - *Lincoln*	ppb	100	100	ND-11.3	7.0	No	Discharge from steel and pulp mills; Erosion of natural deposits.
Copper (c) (7/9-10/01) - *Lincoln*	ppm	1.3*	1.3	N/A	*0.8 (b)*	No	Corrosion of household plumbing; Erosion of natural deposits; Leaching from wood preservatives.
Fluoride (d)	ppm	4	4	0.74-1.11	0.81-1.10 *(b)*	No	Erosion of natural deposits; Water additive which promotes strong teeth; Discharge from fertilizer and aluminum factories.
Lead (c) (7/9-10/01) - *Lincoln*	ppb	15*	0	N/A	8.31 *(b)*	No	Corrosion of household plumbing; Erosion of natural deposits.
Nickel (7/15/02) - *Ashland*	ppb	100	N/A	1.77- 3.47	1.22	No	Erosion of natural deposits; Leaching
Nitrate+Nitrite (7/24/02) - *Lincoln*	ppm	10	10	0.59-1.3	0.53-1.8	No	Runoff from fertilizer use; Leaching from septic tanks, sewage; Erosion of natural deposits.
Selenium (7/9/02) - *Ashland*	ppb	50	50	5.38	3.33	No	Discharge from petroleum and metal refineries; Erosion of natural deposits.
Synthetic Organic Compounds including herbicides and pesticides							
Atrazine (5/29/01) - *Lincoln* (5/28/02) - *Ashland*	ppb	3	3	0.12-0.23	0.09-0.53	No	Runoff from herbicide used on new crops.
Radionuclides							
Gross Alpha (3/11/02) - Lincoln	pCi/L	15	0	N/A	10.2	No	Erosion of natural deposits.
Disinfection - By -Products							
Trihalomethanes - *Lincoln*	ppb	80	N/A	10.3-29.2	9.3-32.0 *(b)*	No	By-product of drinking water chlorination.
Total Haloacetic Acid (HAAS)	ppb	60	N/A	N/A	ND- 3.9	No	By-product of drinking water chlorination.
Clarity							
Turbidity (e)	NTU	0.3	N/A	0.02-0.12	N/A	No	Soil runoff.

Microbiological	Total Coliform Maximum Contaminant Level	Goal (MCLG)	Highest Monthly Positive Coliform Samples	Total Positive E. Coli or Fecal Coliform Samples in 2000	Violation	Fecal Coliform or E. Coli Maximum Contaminant Level	Likely Source of Contamination
Coliform Bacteria	5% of monthly samples are positive	0	7 of 245 (2.86%)	0	No	Fecal Coliform or E. Coli MCL; A routine sample and a repeat sample are total coliform positive, and one is also fecal coliform or E. Coli positive.	Total Coliform Bacteria are naturally present in the environment. Fecal coliform and E. Coli are present in human and animal fecal waste

LINCOLN WATER SYSTEM

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ARE THERE CONTAMINANTS IN OUR DRINKING WATER?

As the regulations require, we routinely test your water for numerous contaminants. These include total coliforms, turbidity, inorganic contaminants, nitrate, nitrite, lead and copper, volatile organic contaminants, total trihalomethanes and synthetic organic contaminants. The contaminants found in Lincoln's water are shown on the test results table on the inside of this brochure. The State allows us to test for some contaminants less often than once per year when the concentrations of these contaminants do not change frequently.

The presence of contaminants does not necessarily indicate a health risk. More information about contaminants and potential health effects can be obtained from EPA's website or by calling the EPA hotline at 800-426-4791, or the Lincoln-Lancaster County Health Department, 441-8000.

WHAT DOES THIS INFORMATION MEAN?

In 2002, your drinking water met or exceeded all State and Federal drinking water regulations. Although a few contaminants such as atrazine, total trihalomethanes and arsenic were detected during testing, their concentrations were well below the levels to cause health concerns.

Atrazine is a herbicide used by farmers to kill weeds in corn and grain sorghum. Atrazine is applied to the fields at planting time. When it rains, atrazine is washed from fields and enters streams eventually finding its way into rivers.

Total trihalomethanes are a group of four disinfection-by-product chemicals formed when chlorine, which is added to the water to kill bacteria, reacts with naturally occurring organic matter in the water. The maximum level allowed is 80 parts per billion. It should be noted that any harmful health effects caused by disinfection-by-products are small compared with the health risks associated with inadequate disinfection.

Arsenic is the twelfth most abundant element in the Earth's crust. It is added to the environment by the weathering of rocks and burning of fossil fuels. It is transported mainly by water. EPA is reviewing the drinking water standard for arsenic because of special concerns that it may not be stringent enough. Arsenic is a naturally occurring mineral known to cause cancer in humans at high concentrations.

DO I NEED TO TAKE SPECIAL PRECAUTIONS?

While the presence of chloramines in our water is not a cause for concern among the general public, home dialysis patients, immuno-compromised individuals and aquarium owners must take special precautions before the water can be used.

For properly conditioned water from kidney dialysis equipment, make sure to contact your doctor or dialysis technician to ensure that your home equipment is adequate and proper tests are being made every time it is used.

Before filling an aquarium or fish pond, the disinfectant must be removed; talk to your local tropical fish store to determine the best water treatment for your fish.

Some people may be more vulnerable to contaminants in drinking water than the general population. Immuno-compromised persons such as persons with cancer undergoing chemotherapy, persons who have undergone organ transplants, people with HIV/AIDS or other immune systems disorders, some elderly and infants can be particularly at risk from infections. These people should seek advice about drinking water from their health care providers. EPA/CDC guidelines on appropriate means to lessen the risk of infection by Cryptosporidium, Giardia and other microbial contaminants are available from the Safe Drinking Water Hotline 899-426-4791.

CROSS-CONNECTION QUESTION AND ANSWER:

Q: What is back-siphonage?

A: Back-siphonage is the reversal of normal flow in a system caused by a negative pressure (vacuum or partial vacuum) in the supply lining.

TO LEARN MORE

For answers to questions you may have or to learn more about the water you drink, call Jerome Obrist at 441-7571. This report and other information about water is available on the City's website at:
http://www.ci.lincoln.ne.us/city/pworks/water/index.htm

If you would like to participate in the decision-making process, please contact the City Clerk to arrange to be placed on the agenda for the regularly scheduled Monday City Council meetings.